REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

I. STATUS OF THE CLAIMS

Claims 1 and 22 are canceled herein.

Various of the claims are amended herein.

In view of the above, it is respectfully submitted that claims 2-21 and 23-42 are currently pending and under consideration.

II. REJECTION OF CLAIMS 1-42 UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER MIYACHI ET AL. (USP # 5,920,414) IN VIEW OF HEILING ET AL. (USP # 5,136,410)

Claims 1 and 22 are canceled herein. Accordingly, claims 2-9 and 11-18 are now, either indirectly or directly, dependent on claim 10, and claims 23-30 and 32-39 are, either indirectly or directly, dependent on claim 31.

Thus, the present invention as recited, for example, in claim 10 as amended herein, relates to an optical sender comprising "means for shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside the optical sender." Claim 10 further recites that the shutting down means comprises "an optical element for receiving said optical signal output from said optical modulator" and "means for controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm."

As disclosed, for example, in the present application, an optical signal is shut down according to at least one of the power alarm and the wavelength alarm. Accordingly, when shutting down a system having an optical sender, or when trouble exists regarding the controlling of temperature performed in the optical sender, an optical signal having a wavelength deviating from a predetermined range is prevented from being output by the optical sender. In the present application, for example, when the optical sender outputs an optical signal, the wavelength of the optical signal is maintained within the predetermined range.

Miyachi discloses that the abnormality decision section 47 outputs an abnormality signal to an alarm generator 48 when the wavelength difference has exceeded an allowable value. When receiving an abnormality signal, the alarm generator 48 gives the alarm to notify the operator. See column 13, lines 23-27 and Figs. 6 and 7. In item 2, on page 3 of the Office Action, the Examiner states that an alarm section is located in the transmitter side of the system of Miyachi (as shown in Fig. 7 of Miyachi).

In item 2, on page 4, the Examiner states that in Fig. 9, Miyachi discloses "an optical element (47) for receiving the optical signal output from the optical modulator...optical signal coming out of the optical modulator is multiplexed by multiplexer (13) and is coupled to the wavelength monitor section (40) which is received by the optical element (47)...and means for controlling the optical element."

It is respectfully submitted that in Fig. 9, Miyachi discloses an abnormality decision section 47, which does not receive an optical signal. Instead, however, the abnormality decision section 47 receives an electrical signal from a wavelength monitoring section 40 (see column 14, lines 55-60).

Thus, Miyachi fails to disclose or suggest the claimed shutting down means having an optical element for receiving the optical signal output from the optical modulator, and means for controlling the optical element so that the transmittance of the optical element is reduced when receiving at least one of the power alarm and the wavelength alarm, as recited in claim 10 of the present application.

Heiling discloses an optical fiber link controlling safety system that detects link failures over distances span by a particular link and reduces (or shuts off) laser radiant energy output when a link failure is detected (see column 4, lines 19-25). However, Heiling does not disclose the features as recited in claim 10 of the present application.

Therefore, Miyachi and Heiling, either alone or in combination, do not teach or suggest the features as recited in claim 10 of the present application.

Independent claims 19 and 20 set forth similar features as recited, for example, in claim 10 of the present application. Therefore, Miyachi and Heiling do not teach or suggest the features as recited in claims 19 and 20.

Independent claims 31, 40, and 41 also set forth similar features as recited in claim 10 of the present application. For example, claims 31, 40, and 41 recite a shutting down device

comprising "an optical element receiving said optical signal output from said optical modulator" and "a second controlling device controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm," which distinguishes over Miyachi and Heiling. Therefore, Miyachi and Heiling also do not teach or suggest the features as recited in claims 31, 40, and 41 of the present application.

In view of the above, it is respectfully submitted that the rejection is overcome.

III. CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that each of the claims patentably distinguishes over the prior art, and therefore defines allowable subject matter. A prompt and favorable reconsideration of the rejection along with an indication of allowability of all pending claims are therefore respectfully requested.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please CANCEL claims 1 and 22 without prejudice or disclaimer.

Please AMEND the following claims:

1. (CANCELED)

2. (ONCE AMENDED) An optical sender according to claim [1]10, further comprising:

a circuit for supplying a power to said light source; and

a power supervisory circuit for monitoring on/off of supply of the power to said light source and outputting said power alarm during a given time period from a time the supply of the power to said light source becomes on or off.

3. (AS UNAMENDED) An optical sender according to claim 2, wherein said power supplying circuit comprises a constant current source.

4. (ONCE AMENDED) An optical sender according to claim [1]10, further comprising:

a wavelength monitor for detecting the wavelength of said light beam; and

a circuit for outputting said wavelength alarm when the wavelength detected by said wavelength monitor is deviated from a predetermined range.

5. (AS UNAMENDED) An optical sender according to claim 4, further comprising means for controlling said light source so that the wavelength detected by said wavelength monitor is maintained constant.

6. (AS UNAMENDED) An optical sender according to claim 5, wherein:

said light source comprises a laser diode; and

said controlling means comprises means for controlling the temperature of said laser diode.

7. (AS UNAMENDED) An optical sender according to claim 4, wherein said wavelength monitor is provided between said light source and said optical modulator.

8. (AS UNAMENDED) An optical sender according, to claim 4, wherein said optical modulator is provided between said light source and said wavelength monitor.

9. (ONCE AMENDED) An optical sender according to claim 4, wherein:

said light source comprises a laser diode for outputting a forward beam and a backward beam; and

said forward beam being supplied to said optical modulator, said backward beam being supplied to said wavelength monitor.

10. (ONCE AMENDED) An optical sender [according to claim 1, wherein] comprising:

a light source for outputting a light beam;

an optical modulator for modulating said light beam in accordance with a main signal to output an optical signal; and

means for shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside the optical sender,

said shutting down means [comprises] comprising:

an optical element for receiving said optical signal output from said optical modulator; and

means for controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

11. (AS UNAMENDED) An optical sender according to claim 10, wherein said optical element is a Mach-Zehnder type lithium niobate modulator.

12. (AS UNAMENDED) An optical sender according to claim 10, wherein said optical element is a Mach-Zehnder type semiconductor modulator.

13. (AS UNAMENDED) An optical sender according to claim 10, wherein said optical element is an electroabsorption type modulator.

14. (AS UNAMENDED) An optical sender according to claim 10, wherein said optical element is a semiconductor optical amplifier.

15. (ONCE AMENDED) An optical sender according to claim [1]10, wherein said shutting down means comprises means for switching the operating point of said optical modulator and shutting down input of said main signal into said optical modulator when receiving at least one of said power alarm and said wavelength alarm.

16. (AS UNAMENDED) An optical sender according to claim 15, wherein said optical modulator is a Mach-Zehnder type lithium niobate modulator.

17. (AS UNAMENDED) An optical sender according to claim 15, wherein said optical modulator is a Mach-Zehnder type semiconductor modulator.

18. (AS UNAMENDED) An optical sender according to claim 15, wherein said optical modulator is an electroabsorption type modulator.

19. (TWICE AMENDED) A terminal device for wavelength division multiplexing, comprising:

a plurality of optical senders for outputting optical signals having different wavelengths; and

an optical multiplexer for receiving said optical signals to output wavelength division multiplexed signal light[:],

wherein each of said optical senders comprises:

a light source for outputting a light beam;

an optical modulator for modulating said light beam in accordance with a main signal to output an optical signal; and

means for shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside of

the respective optical sender,

said shutting down means comprising:

an optical element for receiving said optical signal output from said optical modulator; and

means for controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

20. (TWICE AMENDED) An optical communication system for wavelength division multiplexing, comprising:

first and second terminal devices; and

an optical fiber transmission line for connecting said first and second terminal devices[;],

wherein at least one of said first and second terminal devices comprises:

a plurality of optical senders for outputting optical signals having different wavelengths; and

an optical multiplexer for receiving said optical signals to output wavelength division multiplexed signal light[;],

wherein each of said optical senders comprises:

a light source for outputting a light beam;

an optical modulator for modulating said light beam in accordance with a main signal to output an optical signal; and

means for shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside of the respective optical sender,

said shutting down means comprising:

an optical element for receiving said optical signal output from said optical modulator; and

means for controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

21. (AS UNAMENDED) An optical communication system according to claim 20,

further comprising at least one optical amplifier arranged along said optical fiber transmission line.

22. (CANCELED)

23. (ONCE AMENDED) An optical sender according to claim [22]31, further comprising:

a circuit supplying a power to said light source; and

a power supervisory circuit monitoring on/off of supply of the power to said light source and outputting said power alarm during a given time period from a time the supply of the power to said light source becomes on or off.

24. (AS UNAMENDED) An optical sender according to claim 23, wherein said power supplying circuit comprises a constant current source.

25. (ONCE AMENDED) An optical sender according to claim [22]31, further comprising:

a wavelength monitor detecting the wavelength of said light beam; and

a circuit outputting said wavelength alarm when the wavelength detected by said wavelength monitor is deviated from a predetermined range.

26. (AS UNAMENDED) An optical sender according to claim 25, further comprising a first controlling device controlling said light source so that the wavelength detected by said wavelength monitor is maintained constant.

27. (AS UNAMENDED) An optical sender according to claim 26, wherein:

said light source comprises a laser diode; and

said first controlling device comprising a temperature controller controlling the temperature of said laser diode.

28. (AS UNAMENDED) An optical sender according to claim 25, wherein said wavelength monitor is provided between said light source and said optical modulator.

29. (AS UNAMENDED) An optical sender according, to claim 25, wherein said optical modulator is provided between said light source and said wavelength monitor.

30. (ONCE AMENDED) An optical sender according to claim 25, wherein:

said light source comprises a laser diode outputting a forward beam and a backward beam; and

said forward beam being supplied to said optical modulator, said backward beam being supplied to said wavelength monitor.

31. (ONCE AMENDED) An optical sender [according to claim 22, wherein] comprising:

a light source outputting a light beam;

an optical modulator modulating said light beam in accordance with a main signal to output an optical signal; and

a shutting down device shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside the optical sender,

said shutting down device [comprises] comprising:

an optical element receiving said optical signal output from said optical modulator; and

a second controlling device controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

32. (AS UNAMENDED) An optical sender according to claim 31, wherein said optical element is a Mach-Zehnder type lithium niobate modulator.

33. (AS UNAMENDED) An optical sender according to claim 31, wherein said optical element is a Mach-Zehnder type semiconductor modulator.

34. (AS UNAMENDED) An optical sender according to claim 31, wherein said optical element is an electroabsorption type modulator.

35. (AS UNAMENDED) An optical sender according to claim 31, wherein said optical element is a semiconductor optical amplifier.

36. (ONCE AMENDED) An optical sender according to claim [22]31, wherein said shutting down device comprises a switching device switching the operating point of said optical modulator and shutting down input of said main signal into said optical modulator when receiving at least one of said power alarm and said wavelength alarm.

37. (AS UNAMENDED) An optical sender according to claim 36, wherein said optical modulator is a Mach-Zehnder type lithium niobate modulator.

38. (AS UNAMENDED) An optical sender according to claim 36, wherein said optical modulator is a Mach-Zehnder type semiconductor modulator.

39. (AS UNAMENDED) An optical sender according to claim 36, wherein said optical modulator is an electroabsorption type modulator.

40. (TWICE AMENDED) A terminal device for wavelength division multiplexing, comprising:

a plurality of optical senders outputting optical signals having different wavelengths; and

an optical multiplexer receiving said optical signals to output wavelength division multiplexed signal light[:],

wherein each of said optical senders comprises:

a light source outputting a light beam;

an optical modulator modulating said light beam in accordance with a main signal to output an optical signal; and

a shutting down device shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside of the respective optical sender, and said shutting down device comprises:

an optical element receiving said optical signal output from said optical modulator; and

a second controlling device controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

41. (TWICE AMENDED) An optical communication system for wavelength division multiplexing, comprising:

first and second terminal devices; and

an optical fiber transmission line connecting said first and second terminal devices;

wherein at least one of said first and second terminal devices comprises[:],

a plurality of optical senders outputting optical signals having different wavelengths; and

an optical multiplexer receiving said optical signals to output wavelength division multiplexed signal light;

wherein each of said optical senders comprises:

a light source outputting a light beam;

an optical modulator modulating said light beam in accordance with a main signal to output an optical signal; and

a shutting down device shutting down said optical signal when receiving at least one of a power alarm relating to on/off of power supply and a wavelength alarm relating to the wavelength of said light beam, wherein said power alarm and said wavelength alarm are provided inside of the respective optical sender, and said shutting down device comprises:

an optical element receiving said optical signal output from said optical modulator; and

a second controlling device controlling said optical element so that the transmittance of said optical element is reduced when receiving at least one of said power alarm and said wavelength alarm.

42. (AS UNAMENDED) An optical communication system according to claim 41, further comprising at least one optical amplifier arranged along said optical fiber transmission line.